Lesson Topic 1.1

WATERTIGHT CLOSURES INTRODUCTION

Introduction

In order to conduct inspection, maintenance and repairs

on watertight closures you will need to know reference

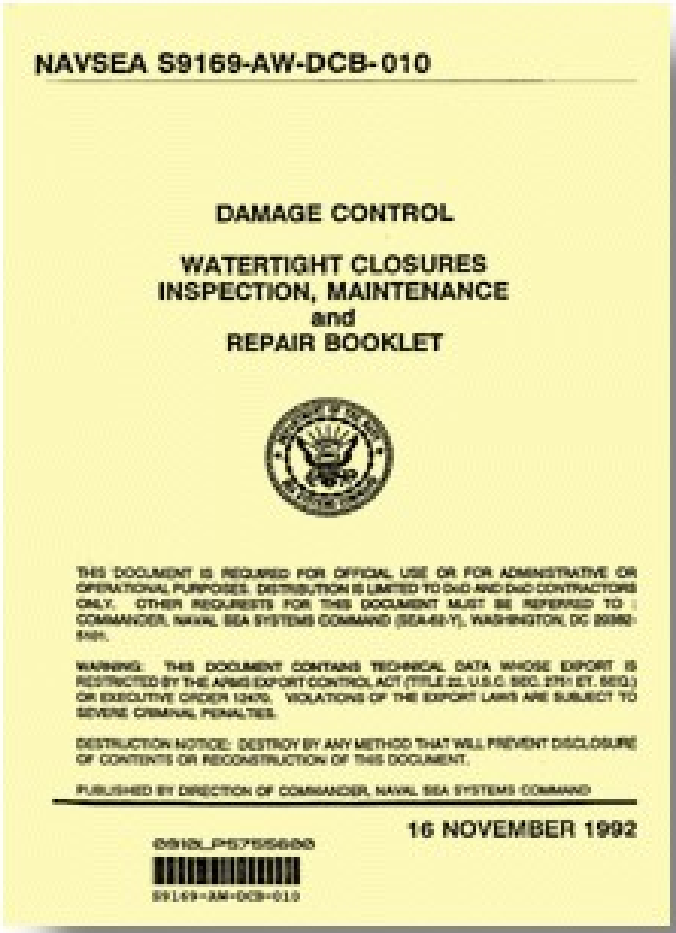
material, PMS requirements and terms associated with

watertight closures.

Enabling Objectives

- Describe reference material, terms and definitions associated with watertight closure maintenance and Repair, in accordance with I Control Watertight Closures Inspection, Main and Repair Booklet

Damage Control Watertight Closures Inspection, Maintenance and Repair Booklet



NAVSEA S9169-AW-DCB-010

DAMAGE CONTROL

WATERTIGHT CLOSURES
INSPECTION, MAINTENANCE
and
REPAIR BOOKLET

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Section 1 - Types of Watertight Closures, Their Function and Description

- Functions of watertight closures
- Descriptions of watertight closures

Section 2 - Inspection, Maintenance and Repair of Watertight Closures

- Safety
- General guidance for inspections
- Knife edge and door frame inspection
- Gasket inspection
- Chalk test
- Handles
- Door wedges
- Quick Acting Watertight Door (QAWTD) linkage
- Conrod and lever studs
- Dog Maintenance

Section 3 - Door Repair and Replacement

- Door repair
- Door disassembly
- Spindle sleeve preparation and bushing installation
- Self-lubricated bushing installation
- Operating handle replacement
- Conrod and lever disassembly / repair
- Individual dog repair

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Section 3 - Door Repair and Replacement (Cont'd)

- Watertight door hinge repair
- Dog wedge replacement
- Door handle spring clips
- Watertight door and frame installation
- Door frame/flange assembly replacement

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Section 4 - Hatch Repair

- Hinge pin replacement
- Dog bolt repair
- Quick Acting Hatch repair

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Section 5 - Scuttle Repair

- Scuttle removal
- Disassembly and repair
- Scuttle assembly
- Installation of scuttle on to frame

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Section 6 - Self-Lubricated Bushings

- General description
- Installation on door dog assemblies
- Installation on quick acting operating handles
- Installation on scuttles

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Section 7 - Armored Ballistic Closures

- Replacement parts for:
  - Ballistic Doors
  - Ballistic Hatches
  - Ballistic Scuttles

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Section 8 - Special Closures

- Manhole covers
- Doors within doors
- Hatches within hatches

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Appendix A - Standard abbreviations and definition for watertight closures

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Appendix B - Characteristics of doors, hatches and scuttles

- Descriptive and graphic characteristics of structural metal watertight doors, hatches and scuttles.
- Each listing includes the National Stock Number (NSN) with its Allowance Parts List (APL) to use when ordering complete assemblies.

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Appendix C - Afloat Shopping Guide, Watertight Closures and Associated Repair Parts

- Lists of watertight doors, hatches and scuttles and their associated repair parts, all which are currently in the Navy supply inventory.

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Appendix C - Afloat Shopping Guide, Watertight Closures and Associated Repair Parts

- Lists of watertight doors, hatches and scuttles and their associated repair parts, all which are currently in the Navy supply inventory.

NOTE: The information in this appendix is usable as a stand-alone document. It is best used, however, in conjunction with other sections of this booklet, particularly Appendices B and D.

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Appendix D - Watertight closures replacement part kits and wearing parts for standard doors, hatches and scuttles

- Ready reference source:
  - dogs
  - wedges
  - clips
  - linkages
  - springs
  - lever arm
  - self-lubricated bushings
  - gasket material and other hardware items associated with watertight closures.

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Appendix E - Special tools and materials

- Lists of the special tools, hardware and materials needed to perform the maintenance on watertight closures.

PMS Requirements

MIP - 1671/008 (series)

- MRC, M-1R
  - Inspect and test steel watertight / airtight doors (quick acting)
- MRC, M-2R
  - Inspect and test aluminum watertight doors (quick acting)

PMS Requirements

MIP - 1671/008 (series)

- MRC, Q-1R
  - Inspect and test steel watertight doors (individually dogged)
- MRC, Q-2R
  - Inspect and test aluminum watertight doors (individually dogged)

PMS Requirements

MIP - 1671/008 (series)

- MRC, S-1R
  - Inspect and test steel watertight / airtight doors (quick acting)

NOTE: This MRC is accomplished on exterior or well doors and doors exposed to high humidity.

PMS Requirements

MIP - 1671/008 (series)

- MRC, S-3R
  - Inspect and test aluminum watertight doors (quick acting)

NOTE: This MRC is accomplished on exterior or well doors and doors exposed to high humidity.

PMS Requirements

MIP - 1671/008 (series)

- MRC, A-1R
  - Inspect and test aluminum watertight doors (individually dogged)

NOTE: This MRC is accomplished on exterior or well doors and doors exposed to high humidity.

PMS Requirements

MIP - 1671/008 (series)

- MRC, A-2R
  - Inspect and test aluminum watertight doors (individually dogged)

PMS Requirements

MIP, 1671/006 (series)

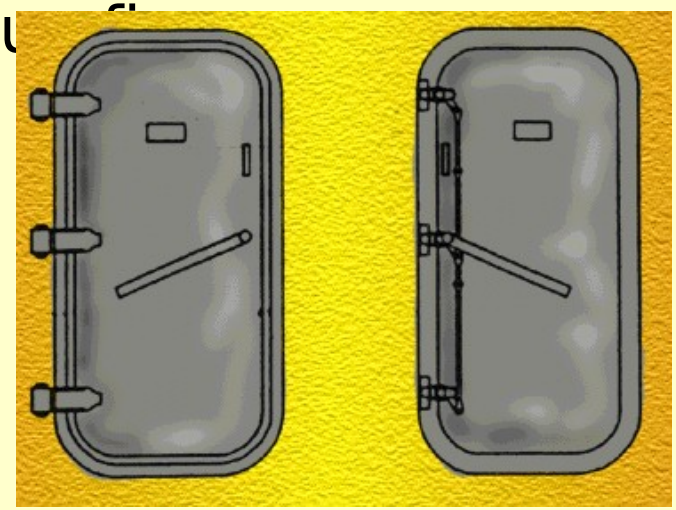
- MRC, S-5R
  - Inspect, clean, lubricate and test watertight hatches and scuttles.

Terms and Definitions

- Airtight Firezone (AT/FZ) Door
  - Located in a firezone boundary.

Terms and Definitions

- Airtight Firezone (AT/FZ) Door
  - Located in a firezone boundary.
- Ballistic Closure
  - Fitted in special treatment steel structure and are intended to resist splinters, fragments, and machine gu

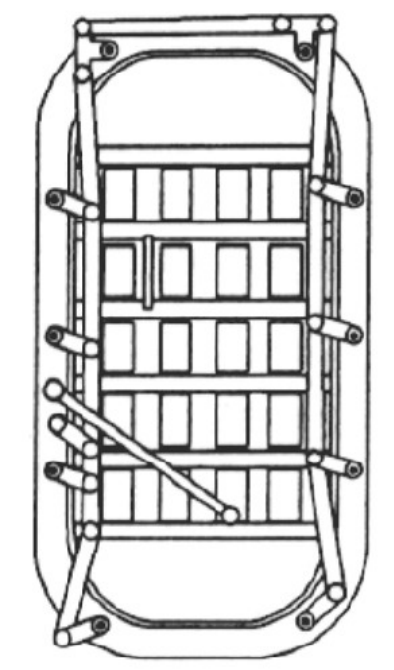


Terms and Definitions

- Airtight Firezone (AT/FZ) Door
  - Located in a firezone boundary.
- Ballistic Closure
  - Fitted in special treatment steel structure and are intended to resist splinters, fragments, and machine gun fire.
- Bolted Equipment Removal Plate (BERP)
  - Removable bolted access plate for the removal of equipment and machinery. Can be in bulkhead or deck.

Terms and Definitions

- Conrod
  - Connecting rod, component of a quick acting closure assembly that connects levers.



Terms and Definitions

- Conrod
  - Connecting rod, component of a quick acting closure assembly that connects levers.
- CRES
  - Corrosion resistant steel, stainless steel.

Terms and Definitions

Degrees of tightness

- Oiltight (OT)
  - Tightness that permits no visible leakage of test fluid
- Watertight (WT)
  - Tightness that permits no visible leakage of water or not more than the allowable drop in air pressure
- Airtight (AT)
  - Tightness that permits not more than the allowable drop in air pressure

Terms and Definitions

Degrees of tightness

- Fumetight (FT)
  - Tightness such that there is no visible or obvious opening in the structure.
- Nontight (NT)
  - Condition for which structure, closure, or fitting is not required to prevent or retard the passage of any fluid or propagation of flame.
- Fumetight Firezone (FT/FZ) Door
  - Designed to retard the passage of flame and smoke and meet the requirements of fumetightness.

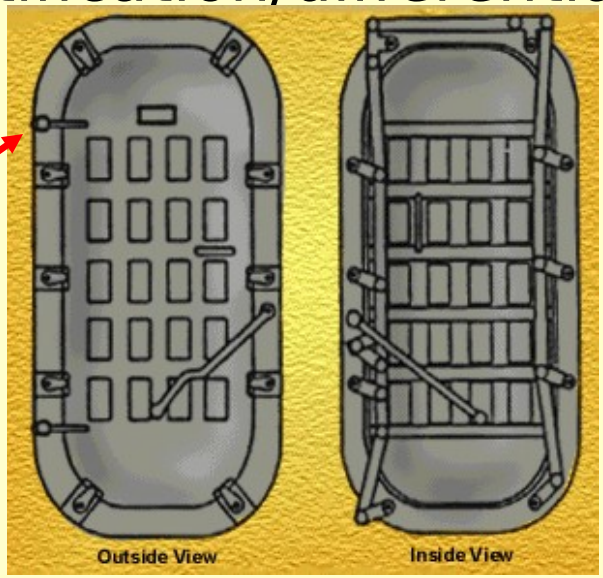
Terms and Definitions

- Joiner Door
  - Used in applications where structural strength, ballistic qualities and tightness are not required.

Terms and Definitions

- Joiner Door
  - Used in applications where structural strength, ballistic qualities and tightness are not required.
- Left hand and Right hand
  - Applicable to doors. Identification/differentiation:

Left handed door



Terms and Definitions

- Joiner Door
  - Used in applications where structural strength, ballistic qualities and tightness are not required.
- Left hand and Right hand
  - Applicable to doors. Identification/differentiation:
- Mild steel
  - Low carbon structural steel. Rusts easily.

Terms and Definitions

- Joiner Door
  - Used in applications where structural strength, ballistic qualities and tightness are not required.
- Left hand and Right hand
  - Applicable to doors. Identification/differentiation:
- Mild steel
  - Low carbon structural steel. Rusts easily.
- Monel
  - A nickel-copper alloy having high corrosion resistance. Often used aboard ships in threaded fasteners and fittings which are subject to exposure to sea water.

Terms and Definitions

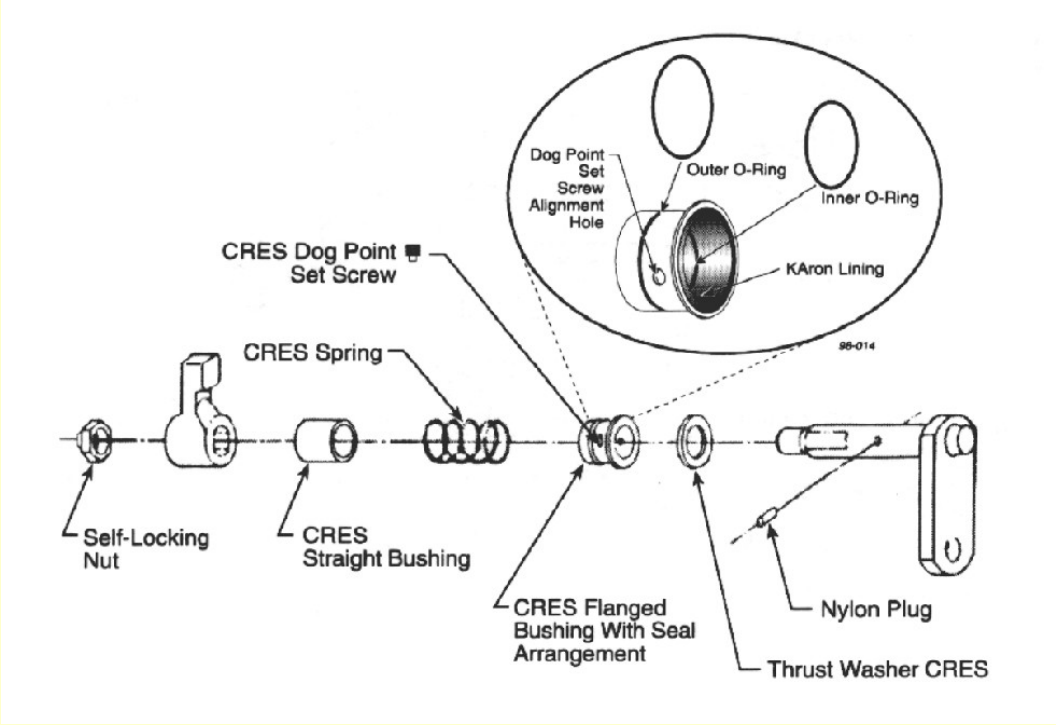
- Proof Test Pressure for WT and OT Closures
  - Tightness pressure times 150 percent.

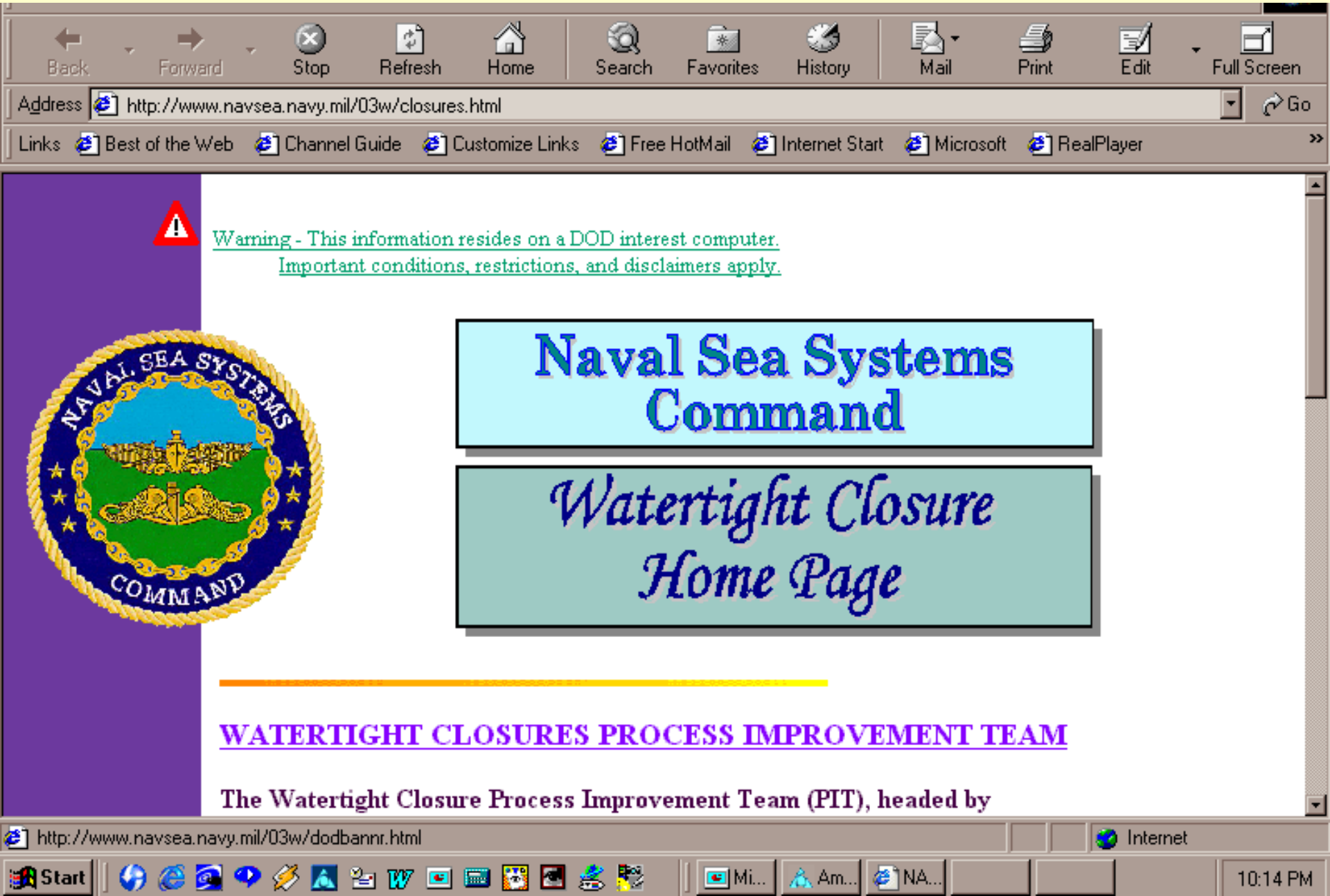
Terms and Definitions

- Proof Test Pressure for WT and OT Closures
  - Tightness pressure times 150 percent.
- Roller Curtain Door
  - Closures composed of a series of interlocking metal slats, which wind into compact rolls at the tops of the openings.

Terms and Definitions

- Self-Lubricated Bushing
  - Teflon coated, stainless steel bushing designed with an "O" ring for watertight fittings.

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REVIEW AND SUMMARY

REVIEW & SUMMARY

1. In what section would you find information concerning gasket inspection?

Review & Summary

(Section two)

Review & Summary

2. What section covers special closures?

Review & Summary

(SECTION EIGHT)

Review & Summary

3. How many different degree’s of tightness are their, and what are they?

Review & Summary

(Five / fumetight, watertight, oiltight, airtight, nontight

Review & Summary

4. What is the formula for determining proof test pressure for Watertight / Oiltight closures?

Review & Summary

(Test pressure X 150%)

Review & Summary

What is the advantage of self lubricating bushings?

Review & Summary

(Eliminates the use of string and stick packing)